

Applicants urge that this "limited number of options" motivation for modifying Colvin EP '042 amounts to an impermissible "obvious to try" standard for obviousness, and the Examiner has, therefore, failed to establish a prima facie case of obviousness.

As the Examiner correctly states, Colvin EP '042 teaches that ZnO may be added to the rubber composition (Example 4), and that the rubber mixing process may include both non-productive and productive stages (page 12, lines 48-49). Colvin EP '042 does not teach, however, at what point ZnO should be included in the mixing process, whether in a productive stage, a non-productive stage, or both. It is the Examiner's position that, since there are a limited number of options for adding the ZnO, that one skilled in the art would simply choose to add ZnO in a productive stage of Colvin EP '042 and, thus, arrive at the present claims. In fact, there are an unlimited number of options for adding the ZnO. ZnO could be added in a productive stage, a non-productive stage, or both, and if added in both stages, could be added in any ratio between the stages. Based on the teaching of Colvin EP '042, then, one skilled in the art could try any one of an infinite number of options for adding ZnO: all in the productive stage; all in the non-productive stage; half in the productive and half in the non-productive; one third and two thirds; etc.; etc. Indeed, based on the teaching of Colvin EP '042, one skilled could try many methods of adding ZnO until arriving at the current claims. However, this is not the standard for obviousness; there must be some motivation to modify the teaching of Colvin EP '042 to arrive at the present claims, and the Examiner has not offered one. "Obvious to try" is an impermissible standard for obviousness, and a prima facie case of obviousness over Colvin EP '042 has not been made. BS

To make up for the lack of motivation in Colvin EP '042, the Examiner states that one skilled in the art would find it obvious to combine the teaching of either Zanzig '580 or Agostini '932 with that of Colvin EP '042 to arrive at the present claims. Both Zanzig '580 (in Table 1) and Agostini '932 (in Tables 1 and 4) teach the addition of ZnO in a productive stage. However, none of Colvin EP '042, nor Zanzig '580, nor Agostini '580 provide motivation to one skilled in the art to combine the teaching of Colvin EP '042 with either of the secondary references to arrive at the current claims, nor has the Examiner provided other motivation to combine the references. Rather, the Examiner has impermissibly picked and chosen references from the prior art, and combined them to reconstruct the claims in hindsight. This is not a proper showing of obviousness.

The law with regard to combination of reference to find obviousness is clear. As noted in *In re Fritch*, 23 USPQ 2d 1780, 1783-84 (Fed. Cir. 1992): "'Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention,

absent some teaching or suggestion supporting the combination. Under section 103, teachings of references can be combined only if there is some suggestion or incentive to do so.' (quoting ACS Hosp. Systems, Inc. v. Montefiore Hosp., 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984)) The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification." Further, the Court notes "It is impermissible to use the claimed invention as an instruction manual or 'template' to piece together the teachings of the prior art so that the claimed invention is rendered obvious. This court has previously stated that '[o]ne cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.' " (quoting In re Fine, 837 F.2d 1071, 1075, 5 USPQ 2d 1596, 1600 (Fed. Cir. 1988)).

The Examiner states that the combination is obvious because all references (Colvin EP '042, Zanzig '580, Agostini '932) relate to vulcanization of rubber compositions. While it may be true that these references relate to vulcanization of rubber compositions, Applicants are at a loss as to why this provides a motivation to combine the references. Indeed, when considering Colvin EP '042, Zanzig '580, and Agostini '932 along with the other references made of record as illustrating the role of ZnO in vulcanization of rubber compositions (Uchino et al., U.S. 5,994,434 (Uchino '434); Ahagon et al, U.S. 4,342,670 (Ahagon '670); Aron, U.S. 3,989,643 (Aron '643)), it becomes clear that the teaching of the prior art would not motivate one skilled in the art to add ZnO in any particular manner in the rubber composition of Colvin EP'042. The following table illustrates the teaching of the five references offered as illustrative of ZnO usage in rubber compositions:

<u>Reference</u>	<u>ZnO Addition Point</u>	<u>Citation</u>
Agostini '932	productive	Tables 1 and 4
Zanzig '580	productive	Table 1
Uchino '434	no indication	Tables 1-6
Ahagon '670	non-productive	Table 2
Aron '643	non-productive	Example 4

In Uchino '434, in Tables 1-6 rubber recipes are shown as including ZnO, but with no indication as to whether it is added in a productive or non-productive step. In Ahagon '670, Table 2 clearly indicates that ZnO is added preferentially in a non-productive step. In Aron '643, it is shown in Example 4 that ZnO is added in a non-productive step, without addition of

sulfur or other curatives. So, of the five references made of record, two references teach addition of ZnO in the productive stage, two references teach addition of ZnO in the non-productive stage, and one does not indicate either way. Thus, when considering all of the references made of record as illustrating the role of ZnO in rubber compositions, it is apparent that the teaching in the art with regard to ZnO addition is not clear, and would not motivate one skilled in the art to combine the teaching of any these references with the teaching of Colvin EP '042 to arrive at the present claims. Indeed, upon reading these references, one skilled in the art would be left with trying any of the infinite options indicated previously herein. Again, using this as motivation amounts to an impermissible "obvious to try" standard for obviousness. The fact that Zanzig '580 or Agostini '932 teach the addition of ZnO in a productive step would not motivate one skilled in the art to add ZnO in the composition recited in the present claims; the Examiner has provided no motivation to combine the references, and absent such motivation the combination is merely an impermissible hindsight reconstruction of the claims based on references picked and chosen from the prior art. As no motivation to combine the references exist, a prima facie case of obviousness has not been made.

Applicants urge that even if motivation to combine the references exists, the present claims are made non-obvious by the unexpected results illustrated in the present specification as filed. As illustrated in Example I, rubber compositions generally containing emulsion styrene-butadiene rubber (E-SBR) showed improved properties when ZnO was added in the productive stage and not in the non-productive stage, as indicated at page 26, line 41 through page 27, line 10. Surprisingly and unexpectedly, however, multi-viscoelastic response (MVR) type E-SBR compositions having ZnO added in the productive stage showed significantly improved compound viscosity over non-MVR type E-SBR compositions and, thus, stayed within a critical compound processability limit while maintaining the improved physical properties as noted at page 27, lines 27-29. As illustrated by the Mooney MS/1.5 100°C values in Table 2 at page 26, line 8, compound viscosity generally increases for compounds having ZnO added in the productive stage (Examples A, C, E), as compared with compounds having ZnO added in the non-productive stage (Examples B, D, F). When comparing the effect of ZnO addition in the productive stage for MVR compositions (A vs. B; C vs. D) with the effect for non-MVR compositions (E vs. F), it is apparent that the increase in MS/1.5 100°C is significantly less for the MVR compositions. The following table illustrates this effect

<u>Samples</u>	<u>A vs B</u>	<u>C vs D</u>	<u>E vs F</u>
Rubber Type	MVR	MVR	non-MVR
change in MS/1.5 100°C	10.8	10.8	16

The lower MS/1.5 100°C represents a significantly more processable composition for the MVR compositions than for the non-MVR compositions (it should be noted that the non-MVR compounds E and F contained 8 phr more process oil than the MVR compounds; oil reduces compound viscosity so the effect is even more remarkable). Thus, a more processable composition is obtained using an MVR rubber, while maintaining the improved physical properties due to adding ZnO in the productive stage and not in the non-productive stage. This result is highly surprising and not expected based any teachings of the prior art.

It is also to be noted that the non-MVR E-SBR used in Examples E and F are similar to the rubbers used in the closest prior art, i.e, Agostini '932, Zanzig '580, Uchino '434, Ahagon '670, and Aron '643, in that these references also teach the use of non-MVR rubbers. Thus, Applicants urge that the data of Example I compare the results of the present invention with that of the closest prior art. Significantly, none of these references teach an advantage to preferentially adding ZnO in any particular way, such as in a productive or non-productive stage. The results in Example I clearly show the advantage of adding ZnO in a productive stage with MVR rubbers, and the disadvantage of adding ZnO is a productive stage with non-MVR rubbers. The cited prior art makes no such distinction.

Applicants urge that these surprising and unexpected results are sufficient to overcome a prima facie showing of obviousness.

Applicants urge that for all of the foregoing reasons, the claims are fully patentable over the cited references, and respectfully request allowance of the claims.

Respectfully submitted,

  
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